Visual Impairment/Intracranial Pressure (VIIP) Monitoring and Diagnostic Capabilities Aboard the International Space Station

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Disclosure Information

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I have no financial relationships to disclose.

I will discuss the following off-label use and/or investigational use in my presentation:

- Use of ultrasonography for ophthalmic examinations

Agenda

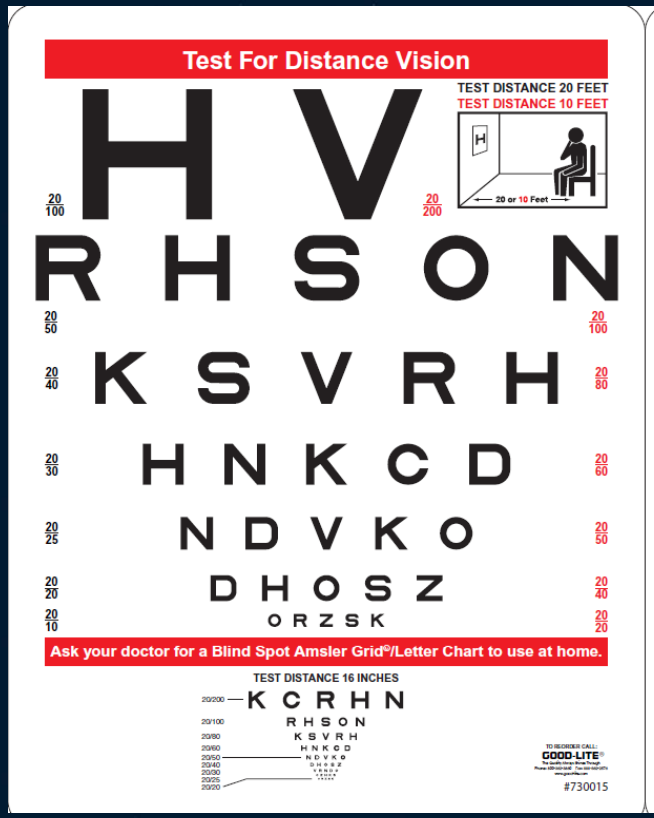
- Current ISS Capabilities
- Future ISS Capabilities
  - Overall Process
  - Functional Requirements Review
  - Market Survey Review
  - Product Selection
  - Implementation Schedule

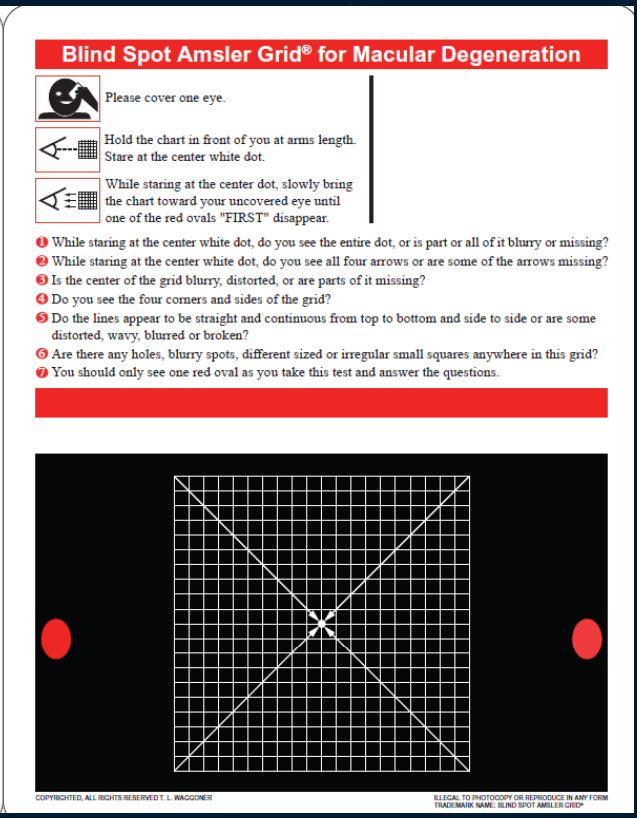
Current ISS Capabilities

- Functional Vision Testing
  - Vision Questionnaire
  - Near and Far Visual Acuity
- Fundoscopy
- Tonometry
- Non-invasive Eye Ultrasound

Current ISS Capabilities

- Functional Vision Testing
  - Near and Far Visual Acuity Chart
  - Amsler Grid





Current ISS Capabilities

- Fundoscopy
  - ProVizion Optics modification of Welch Allyn PanOptic with camera

Current ISS Capabilities

- Tonometry
  - Reichert Avia Tono-pen

Current ISS Capabilities

- Non-invasive Eye Ultrasound
  - General Electric Vivid q

Future ISS Capabilities

- Functional Vision Testing
  - Vision Questionnaire (Augmented)
  - Near and Far Visual Acuity (Augmented)
  - Contrast Sensitivity (New)
  - Threshold Visual Field (New)
- Fundoscopy (Augmented)
- Tonometry
- Non-invasive Eye Ultrasound
- Optical Coherence Tomography (New)

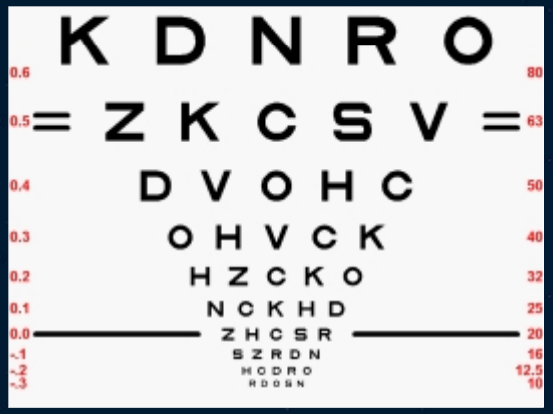
Future ISS Capabilities

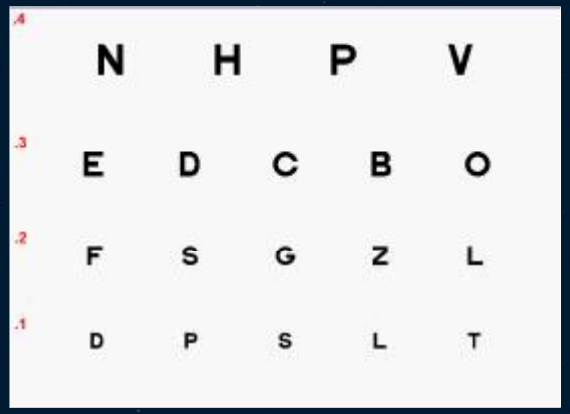
Overall Process

Task	Deliverable
1) Functional Requirements Review	Functional Requirements Document
2) Market Survey Review	Product Survey Matrix
3) Product Selection	Product Procurement
4) Flight Certification and Implementation	Flight Hardware

Future ISS Capablities

- Near and Far Visual Acuity
- Contrast Senstivity
  - VisionScience Software Acuity Pro





Future ISS Capabilities

- Fundoscope
  - MERGE EyeScan

Future ISS Capabilities

- Optical Coherence Tomography
  - Heidelberg Spectralis

Future ISS Capabilities

- Threshold Visual Field
  - Currently in functional requirements generation phase

Future ISS Capabilities

- Estimated In-flight Implementation Schedule
  - Acuity Pro – June 2013
  - MERGE EyeScan – Summer 2013
  - Heidelberg Spectralis – Fall 2013
  - Threshold Visual Field – Winter 2013

Thank You

Q&A

QUESTION

Which of the following capabilities is not currently available on the International Space Station?

a) Fundoscopy
b) Non-invasive Ultrasound
c) Optical Coherence Tomography
d) Tonometry
e) Functional Vision Testing

ANSWER

c) Optical Coherence Tomography